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**SUPPLY
and
DEMAND**

UNIVERSITY GRADUATES

1961-62

Canada

**NATIONAL EMPLOYMENT SERVICE
UNEMPLOYMENT INSURANCE COMMISSION
OTTAWA**



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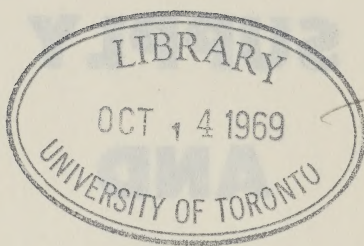
SUPPLY AND DEMAND

UNIVERSITY GRADUATES

1961-62

Prepared by the Executive and Professional Section
National Employment Service
Ottawa

Graduation projections based on material
prepared by The Dominion Bureau of Statistics for the
National Employment Service



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Information prepared based on material
received by the Executive Section of the National
Employment Service

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INTRODUCTION

Purpose:

The purpose of this publication is to present the latest information available relating to the employment of university graduates in 1962. In using this booklet, it should be remembered that the forecasts are based in large measure on information for 1960, modified by whatever material was available for 1961. Nevertheless, it can be expected that these forecasts will serve as a reasonably accurate guide for 1962.

This booklet is primarily designed for distribution to graduating and graduate students of universities and colleges, and to the prospective employers of these students. However, it will also be useful to undergraduates, teachers and counselors in career selection.

Increasing Supply:

The steadily accelerating increase in enrolment at Canadian universities and colleges is a significant factor in appreciating the future supply of graduates. In the 1960-61 academic year 114,000 students enrolled, as compared to 102,000 in 1959-60, representing an increase of 12 per cent. If the annual increase continues to grow, we can anticipate an enrolment twice as large as the present one during the 1969-70 academic year.

The immediate impact on the employment market can be seen in the growing numbers of new university graduates seeking employment each year. Graduates in 1962 are expected to total more than 15,500, almost 11 per cent more than the 1961 graduating class of 14,000. This development is in significant contrast with the smaller percentage increase of less than eight per cent over the 1960 graduating class of 13,000.

Starting Salaries:

The accompanying estimate of average monthly starting salaries paid by employers to 1961 graduates gives an indication of salary ranges which may be anticipated in 1962. However, starting salaries change from year to year and the data contained in this table should be used with caution.

Information relating to different groups of graduating students is contained in the following pages. Following this a brief description of the role of the National Employment Service in the placement of university students in employment is given at the end of the booklet. A tabulation of graduating classes by courses for the major universities and colleges is to be found at the centre of the booklet.

Acknowledgements:

The publication of this booklet would not be possible but for the excellent co-operation of many different associations, professional and otherwise. Private individuals, institutions of higher learning, and various government organizations have also rendered invaluable assistance. Particular mention must be made of the surveys conducted in co-operation with the Education Division of the Dominion Bureau of Statistics, and the Pay Research Bureau of the Civil Service Commission.

ANTICIPATED MONTHLY STARTING SALARIES

1961 UNIVERSITY GRADUATES

The following information is based on replies received from a survey of national employers active in the recruiting of university students. Blank spaces are left where suitable information is not available.

DISCIPLINE	BACHELORS	MASTERS	DOCTORS
General Arts & Science	345		
Honours Biological Sciences	372		579
Honours Chemistry	398	469	600
Honours Geology	433		613
Honours Physics	405	437	588
Honours Math. & Physics	379		529
Honours Mathematics	370		
Honours Psychology	376		
Honours Econ. & Pol. Science	374		
Agricultural Engineering	390		
Chemical Engineering	421	463	630
Civil Engineering	418	506	
Electrical Engineering	415		
Business Engineering	425		
Engineering Physics	423		
Mechanical Engineering	423	470	
Metallurgical Engineering	428	474	
Mining Engineering	475		
Petroleum Engineering	439		
Forestry	383		
Social Work	362		
Library Science	367		
Pharmacy	452		
Commerce - General Employment	376	407	
Commerce for CA Articles	316		

PASS ARTS AND SCIENCES

It is anticipated that the number of graduates in Pass Arts and Science courses in 1962 will be 16 per cent higher than the number in 1961. They will make up approximately 50 per cent of the total number of graduates. This trend can be expected to continue in future years since the enrolment in Pass Arts and Science courses is increasing faster than the total for all university courses. In 1961 there was a 13 per cent increase in the Pass Arts and Science enrolment,

contrasted with an overall 12 per cent increase for the student body as a whole. However, some of these graduates will not be entering the labour market, as these degrees are often used as stepping stones to professional courses.

A survey of university students in Western Canada showed that approximately 60 per cent of the students would continue their studies after graduation. Of these, 33 per cent indicated, as a first choice, that they planned to enter the teaching profession, while 26 per cent indicated they would go on to postgraduate studies and 41 per cent would continue in other faculties. As a second choice, only 15 per cent indicated teacher training, while 41 per cent planned on post-graduate studies. A surprisingly large number, approximately 43 per cent, wanted to enter teacher training as a third choice, thus indicating that some graduates may be using the teaching profession as a final choice if all other possible avenues are closed.

Postgraduate study is seldom open to the pass graduate unless he has shown superior academic ability and is able to take a qualifying year before studying for a Master's degree. Positions as junior executives are open to graduates interested in business careers, and many courses can be combined with a sales career.

Students should try to orient their training with a job qualification. For example, a person interested in a career in public relations could obtain valuable experience through work on the campus newspaper.

In one of the newer fields the National Machine Accountants Association estimates that 10,000 people will be needed during the 1960s to operate and program computers. Pass Arts and Science students with backgrounds in mathematics and accounting, and some experience on computers, should find excellent opportunities in this field. The N.M.A.A. reports that it is close to developing a certification program, and that when this is done universities will be approached for the inclusion of this program in their curricula.

Graduates in Arts and Science may find employment in the accountancy field, as some firms are beginning to employ graduates, other than those in Commerce, as students-in-accounts. It is of interest to note the principle recently approved by the Canadian Institute of Chartered Accountants, restricting entrance into the profession to university graduates, such graduates being drawn from any field of study. The target date for the implementation of this policy has been set for 1970.



HONOURS ARTS

An Honours Arts degree is an excellent basis for a teaching career, although

further formal training is usually required. In Ontario, special interest has been shown in securing Honours Arts graduates for the teaching profession. Many graduates find employment in social work, journalism, and in administrative or personnel work.

Although employment prospects are fairly good, starting salaries are not as high as they are in engineering and the other honours fields. To be qualified professionally in any area of Arts Study, a Ph.D. is usually the minimum requirement, although a Master's degree is sometimes sufficient.

The number of graduates in Honours Arts in 1961 increased at a slightly higher rate than has been noted for graduates as a whole. In 1962, this increase is expected to be approximately 20 per cent.

HONOURS SOCIAL SCIENCE

The decline in graduating classes noted in 1960 for Honours Social Science will be reversed in 1962, as approximately 260 students are expected to graduate, a 40 per cent increase over 1961. These graduates are somewhat better qualified professionally with a Bachelor's degree than those with Bachelor's degrees in Honours Arts.

A Master's degree is essential professionally, and a Ph.D. is almost a necessity in areas such as practicing psychologists in consultant firms, academic positions, research employment, and senior positions in institutional practice. However, a graduate in Honours Social Science may find employment in personnel departments in industries, and junior positions in mental health clinics and hospitals.

Graduates may also find openings as junior executives and in administrative work. Positions as economists, statisticians, and in administration work are often found, although postgraduate work in these fields is usually needed.

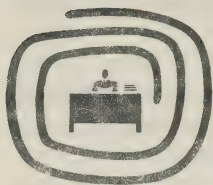
Salaries for the new graduate in Honours Social Science are somewhat higher than for Honours Arts graduates.

SECRETARIAL SCIENCE

The slight decrease noted in the number of Secretarial Science graduates in 1961 will continue in 1962 with a decline of approximately 10 per cent anticipated. In view of the waning interest in this field, one institution, Waterloo University College, is planning to discontinue the course.

A broad Arts background in such subjects as languages, economics, and history, together with basic secretarial skills, equip the graduate to take good salaried positions in government, industry, and universities. Honours graduates take an additional year of study, extending their field to business administration, including auditing, marketing and accounting.

COMMERCE AND BUSINESS ADMINISTRATION



Although employment opportunities for graduates of Commerce and Business Administration are excellent, only a slight increase is expected in the graduating class for 1962. Starting salaries are good, and for those interested in articling for a C.A., there has been a substantial improvement in salaries during the past few years.

An increasing number of graduates from other fields are now being recruited into the C.A. field. This may be partially due to the shortage of Commerce graduates, as well as to the planned change in the entrance requirements for C.A. articles to a university degree for all students by 1970.

Social Work

In the field of social work the supply of graduates is very far from sufficient to meet the demand. In 1961 there was a small increase in the number of graduates, and the increase in 1962 is expected to be of the same magnitude, five to 10 per cent.

Graduates with either a BSW or MSW degree should have no difficulty finding employment. The shortage is so severe that graduates in other academic fields, particularly in the liberal arts and social sciences, are often able to secure junior positions in social work. The Canadian Association of Social Workers states that there is an excellent future for men and women in government, welfare, and voluntary social agencies, including high administrative positions.

HEALTH PROFESSIONS

Medicine

The employment outlook for physicians will continue to be excellent. In the long run, the country's expanding population, the rising health consciousness of the general public, and the trend towards higher standards of medical care point toward a steady increase in the demand. General practitioners are needed in many areas of the country. Specialists are also being sought by hospitals, the Armed Forces, government agencies, private industry, and medical schools. The number of graduates in 1962 will be about the same as for 1961.

Dentistry

The acute shortage of dentists in Canada will continue despite a predicted 10 per cent increase in the number of graduates in 1962. Larger graduating classes are anticipated in the future, but the demand for dentists will continue to grow in view of population growth and the wastage of dentists arising from retirements and deaths.

Nursing



Figures available would indicate that the reasonably substantial increase in the number of diploma nursing graduates (about 15 per cent in 1961) will not be evident in 1962. The increase predicted is about five per cent, while an actual decline in the number of B.Sc. graduates in nursing is expected.

The University of Ottawa, during the 1961-62 academic year, will offer for the first time in Canada a Master of Science degree in nursing. This degree will allow for original research in either nursing education or in public health nursing.

Employment opportunities for the registered nurse increasingly exist in all branches of nursing graduates; e.g., public health and occupational health, as well as hospital nursing. There is also a growing demand for nurses with advanced preparation in teaching, supervision, administration, and research, according to the Canadian Nurses' Association.

Registered nurses now receive a salary comparable to that paid in other professions requiring similar preparation.

Pharmacy

Despite an expected increase of 17 per cent in graduates in 1962 over 1961, the serious shortage of pharmacists in Canada will continue. Employment may be found in retail drug outlets, hospitals, all levels of government, and in manufacturing pharmacy or pharmaceutical chemistry. Postgraduate work is usually required for these last two fields.

The starting salaries for graduate pharmacists, who have completed their apprenticeship, continue to show improvement, and are competitive with other fields of university study.

Physiotherapy and Occupational Therapy

The trend noted last year, towards an increase in the number of graduates, is continuing. In fact, the graduating class for 1962 should show a larger per-

centage increase than that shown in 1961. The University of Manitoba with its first graduating class in 1962 is a factor in this increase. The growth can be expected to continue in the same fashion for the next few years, as the University of Manitoba school continues to grow, and with the establishment of another new school at the University of British Columbia in 1961.

However, both the Canadian Association of Occupational Therapy and the Canadian Physiotherapy Association point out that the demand for physical and occupational therapists is constantly increasing, and can be expected to be greater than the supply for many years. The establishment of the two additional training schools, as already indicated, will increase the supply of graduates, but this increase is not expected to meet the increase in demand occasioned by new hospitals and rehabilitation centres, coupled with the annual loss to the profession through marriage.

There are widespread employment opportunities with hospitals, clinics, social and welfare agencies, government, industry, and the Armed Services.

Veterinary Science

Veterinary Science graduates should find excellent employment opportunities, as the shortage of qualified veterinarians continues. A small increase similar to that recorded in 1961 is anticipated in 1962. This will not come close to meeting the demand.

There is an urgent need for Doctors of Veterinary Science in rural and urban practices, and in government work. The graduates who would prefer small animal practice in the larger urban centres, will find that there are ample opportunities to work as assistants in animal hospitals. Veterinarians may also find employment as meat inspectors, regulatory officers, and research officers.

LIBRARY SCIENCE

To meet the drastic shortage, new library schools have been established at the Universities of British Columbia and Montreal. In June 1962 the demand for qualified librarians will have increased by 500, with much of this need centered in the Maritimes and Prairie provinces.

The categories most difficult to fill are children's, cataloguing and music librarians, all of which demand a high degree of patience and imagination. With the advent of modern technology and mechanical research techniques, the need for librarians with a science background has become crucial. Excellent opportunities are available to them in the areas of research, economics, industry, business, and in government departments.

Qualifications for professional librarianship include a broad background of

general knowledge, a Bachelor degree in Arts, Science, or other specialty, plus a Bachelor of Library Science degree. For those with experience in library work or with a Master of Library Science degree, employment prospects are greatly increased.

It is encouraging to note that the upward trend in salaries for librarians is continuing, and starting salaries are now competitive with those for graduates of other faculties.

AGRICULTURE AND AGRICULTURAL ENGINEERING

There is expected to be an increase of approximately five per cent in the number of graduates in 1962, compared with the 1961 rise of about 25 per cent. A larger number, and a greater variety, of future employment opportunities for agricultural graduates seem likely.

The dramatic changes taking place in Canadian agriculture are increasing the demand for technically-trained personnel. Despite a rapid decline in the number of farms and farm workers, the labour force in the non-farm segment of agriculture has risen appreciably states the Agricultural Institute of Canada. Every marketing, financial, supply, processing, or production industry associated with agriculture represents a potential employer of personnel trained in modern technical agriculture, and particularly graduates from agricultural faculties.

An increase of 2.6 per cent in the demand for agricultural graduates, during the period 1960-62, was forecast in a recent survey by the Department of Labour. The Canadian Federation of Agriculture says that any student interested in making constructive contributions to society in rural agricultural extension, research, and education, will find growing and increasingly challenging possibilities opening up. These opportunities will continue to grow as the viewpoint gains ground, of making rural development, in its broadest sense, a major aim of public policy. Entry into this field may be made via the scientific disciplines, economics, and sociology.

Postgraduate training is valuable in the field of agriculture, and the percentage of those in the field with higher degrees is quite large, 18 per cent having a Master's degree, and 13 per cent having a Doctorate.

HOUSEHOLD SCIENCE

It is encouraging to note that the slight decrease noted in the number of 1961 graduates, below that of the previous year, is expected to reverse itself in 1962. There should be a small increase in the graduating class, and this should more than offset the 1961 decline.

A recently conducted survey indicates that starting salary rates for larger employers are good, although it would appear that smaller employers do not offer

competitive salaries. Opportunities as dietitians are open to those who have successfully completed their internship, thus qualifying for the certificate of the Canadian Dietetic Association.

Employment opportunities are excellent and the demand for these graduates far exceeds the supply.



ARCHITECTURE

Qualified graduates should find no difficulty in locating suitable employment, as the demand continues in all phases of the profession. Government, public, industrial, and residential construction offer many opportunities for the new graduate.

There will be a slight increase in the number of graduates, which is a reversal of 1961, when there was a sharp decline. However, this increase in the number of graduates will not meet the expected demand. Starting salaries remain good for the professionally qualified.

FORESTRY AND FORESTRY ENGINEERING

Employment opportunities in production, conservation, or in forest research, should be sufficient to absorb the 1962 graduating class. There will be a small decrease in the number of graduates. The starting salaries are good for the new graduates.

LAW

The decrease in the size of the graduating class noted in 1961 will continue in 1962. However, the decline is expected to be relatively insignificant. This compares with the 1961 drop of about 30 per cent, largely a result of the much smaller graduating class from Osgoode, compared with the unusually large 1960 class.

The demand for new graduates continues as the need grows for legal staff in private business and governmental bodies. In addition, there still exists a shortage of lawyers in private practice and, indicative of this shortage, a slight increase has been noted in salaries offered to articling law students.

EDUCATION

The Canadian Teachers' Fédération states that the question of supply and

demand, in the elementary and secondary school teaching fields, has not received sufficient study to justify reliable estimates or predictions. There is some evidence, however, that the chronic excess of demand over supply, which has existed since the early 1950's, has diminished. For example, the enrolment in teacher training institutions was 29,360 in 1960-61, an increase of 25 per cent over the previous year's enrolment.

It would appear that the supply of new elementary school teachers, in particular, is now adequate to fill positions created by expansion and retirement. Indeed, several provincial departments of education have taken advantage of the present high level of supply, to the extent of upgrading their entrance and certificate requirements.

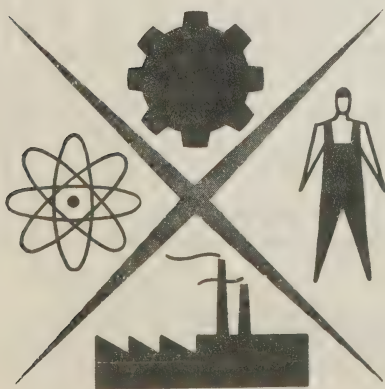
The supply of qualified secondary school teachers -- particularly those with specialist training in some academic discipline -- is still inadequate, although here again, enrolments are exhibiting marked increases. Some experts have predicted a continuing shortage for two or three more years, to be followed by another three-year period in which an excessive high supply will displace the large number of teachers who are at present unqualified. At the termination of this period, secondary school teaching is likely to become increasingly competitive.

Teaching opportunities are also open to recent graduates in Honours Arts, particularly in Ontario where special interest is shown in such graduates.

Teachers' salaries vary widely across the country, with a general tendency toward higher salaries in a westerly direction. These variations are roughly proportional to those in the general wage levels which are found between provinces.

In the high-income provinces, teachers' starting salaries are now definitely competitive with starting salaries offered for similar qualifications in other professional fields.

ENGINEERING AND HONOURS SCIENCE



There will be an increase in the number of Honours Science graduates in 1962. The largest gain in the engineering field will be in the number of chemical engineers, where a 30 per cent increase in graduates is expected, while there will be a marked decline in the number of petroleum engineers.

ESTIMATED GRADUATIONS

University	HOURS ARTS				PASS	MISCELLANEOUS COURSES												HOURS SCIENCE			
	Liberal Arts	Social Sciences	Arts and Science			Agric.	Archtr.	Commerce & Bus. Admin.	Forestry	Household Science	Library Science	Pharmacy	Phys. & Occup. Therapy	Scerl. Science	Social Work	Biolog. Sc.	Chem.				
	61	62	61	62	61	62	61	62	61	62	61	62	61	62	61	62	61	62			
Memorial	4- 3	2- 2	34- 20					15- 8										1- 0			
Acadia	2- 0		103- 94					7- 9					10- 11					1- 1			
Dalhousie (a)	14- 9	4- 7	65- 110					25- 28					12- 14		16- 17						
St. Fr. Xavier			97- 138					27- 40													
Mt. Allison	14- 15	0- 2	121- 141					14- 26					13- 16					1- 2			
U. N. B.	10- 8	1- 3	70- 90					17- 24										1- 2			
McGill	53- 80	19- 25	335- 372					55- 59							39- 49			15- 10			
Sir George W.			175- 240					61- 71													
Montreal (b)	17- 26	20- 43	1103- 1319					72- 80							20- 28			9- 19			
Sherbrooke			88- 94					33- 40													
Laval	94- 105	21- 35	842- 1075					128- 183							41- 25			5- 4			
Assumption	12- 8	2- 2	133- 180					44- 6													
Carleton (c)	6- 8	0- 1	112- 178					16- 25													
McMaster	28- 48	2- 2	145- 138					16- 11										2- 5			
Queen's	63- 89	8- 17	229- 192					12- 12										9- 4			
Ottawa (d)	96- 118	35- 39	142- 176					82- 100							17- 23						
Toronto	265- 317	42- 49	661- 715					93- 90	15- 17	20- 24	86- ?	71- 84	45- 56	109- ?	6- 10	22- 30					
Western	96- 129	11- 15	379- 395					58- 74		3- 5				27- 21	5- 6	3- 5					
Manitoba (e)	17- 34	5- 4	636- 720					30- 35	37- 41					60- ?	0- 2	2- 3					
Saskatchewan (f)	9- 6	3- 3	460- 485					29- 40	12- 11						1- 1						
Alberta	10- 25	2- 4	337- 393					57- 81	24- 27						1- 1	2- 2					
U. B. C. (g)	71- 87	8- 21	523- 640					125- 137	56- 26	37- 32				80- ?	3- 2	13- 9					
Waterloo U.C.	12- 11		50- 65					0- 7						6- 3							
O. A. C.										35- 46											
Mt. St. Vincent										11- 4				11- 8							
TOTALS:	893- 1126	185- 274	6840- 7970					1016- 1186	131- 113	296- 302	203- 41+	288- 341	91- 87+	382- 142+	45- 65	87- 97					
	(1)	(2)						(4)							(5)	(6)					
Composite	1078- 1400					Totals for Miscellaneous Courses												2916- 2768+ (8)			
Totals:																					

(a) Dalhousie estimates include Maritime School of Social Work and University of King's College
(b) University of Montreal estimates include Loyola College
(c) In Engineering the actual field of graduation is not known at Carleton until the final year of the course
(d) Ottawa University estimates include College Bruyere, College Classieux de Cornwall, Petit Seminaire D'Ottawa, St. Patrick's College

(a) University of Manitoba estimates include Brandon College, College de St. Boniface, St. John's College, St. Paul's College
(f) University of Saskatchewan estimates include the Regina campus.
(g) Petroleum Engineering the number graduating is not known until the final year of the course
(a) University of British Columbia estimates include Victoria College

University	Biol. Sc.	Chem.	Maths.	Maths. & Physics	Geology	Geol.	Chem.	Civil	Elec.	Mech.	Metal.	Mining	Petrol.	Eng. Physics	General
	61	62	61	62	61	62	61	62	61	62	61	62	61	62	61
Memorial	2- 0	2- 3	1- 0												
Acadia	3- 0	1- 0			1- 0										
Dalhousie (a)	2- 2	1- 5	1- 2											4- 5	
Sr. Fr. Xavier		4- 1			1- 1										
Mt. Allison	4- 2	2- 3	0- 3	1- 0	1- 1										
U. N. B.	3- 0	1- 0	3- 0		1- 0										0- 3
McGill	17- 19	15- 8	3- 9	18- 10	2- 1		0- 5	58- 53	34- 36	22- 20				6- 6	4- 11
Montreal (b)	11- 14	6- 10	3- 7	1- 2	5- 2	6- 2	7- 11	97- 103	48- 50	36- 45	7- 12	9- 22		21- 16	
Sherbrooke								17- 15	9- 11	3- 9					
Laval	5- 5	8- 5	0- 4			3- 2	5- 4	54- 60	29- 21	17- 20	7- 2	5- 4		5- 5	
Assumption	1- 1	3- 2	4- 5				5- 4	8- 17	8- 10	4- 1				0- 1	
Carleton (c)	2- 0	0- 1	2- 0	1- 0	1- 2			10- (c)	5- (c)	2- (c)				1- (c)	0- 28
McMaster	2- 4	11- 12	12- 6	5- 2	5- 2		5- 6	8- 13	8- 8	0- 1				4- 4	
Queen's	8- 13	20- 12	5- 7	9- 12	11- 7	11- 10	31- 23	40- 36	43- 37	32- 42	7- 6	10- 3		25- 30	17- 11
Ottawa (d)	1- 2	3- 6	3- 3	1- 1			6- 5		5- 13						
Toronto	6- 10	13- 16	39- 63	8- 6	8- 6	13- 10	50- 51	90- 55	81- 68	83- 66	15- 9	15- 9		79- 91	
Western	3- 2	18- 10	11- 13	10- 9											21- 22
Manitoba (e)	1- 3	4- 9	2- 3	4- 7	4- 4	3- 2		58- 49	44- 37	37- 28				5- 4	
Saskatchewan(f)	3- 3	5- 4	1- 2	2- 0	3- 1	10- 9	17- 17	60- 72	33- 56	52- 38			7- (f)	19- 24	2- 2
Alberta	1- 2	9- 11	4- 4	12- 5			38- 37	76- 86	56- 89	36- 40	5- 5	6- 4		11- 10	
U. B. C. (g)	15- 31	19- 22	8- 9	11- 28	8- 14	10- 12	17- 30	36- 42	70- 54	55- 45	10- 24	3- 5		24- 13	
O. A. C.								0- 11		0- 8					
U. of Waterloo		0- 2	2- 2				0- 12	0- 22	0- 7	0- 15				0- 15	
N. S. Tech.							13- 15	61- 48	39- 43	24- 36	2- 8	3- 3			
R. M. C.				1- 6			0- 14	0- 53	0- 51	0- 46				0- 5	
TOTALS:	90- 113	145- 142	65- 79	88- 129 (7)	73- 55	56- 47	216- 259	733- 790+	609- 704+	463- 528+	63- 76	58- 51	24- 5+	204- 229+	44- 77
Totals for Engineering and Applied Science Courses 2470 - 2766+ (8)															
Totals for Honours Science Courses 593- 680															
Totals for all Courses 13897 - 15584+ (8)															

1 - Includes Philosophy at U. of Montreal, Laval, Ottawa and Western

2 - Includes Economics, Political Science, and Sociology

3 - Includes Agricultural Engineering at U. of Saskatchewan

4 - Includes Industrial Engineering at U. of Toronto

5 - Includes Bacteriology, Biochemistry, Biology, Botany, and Zoology

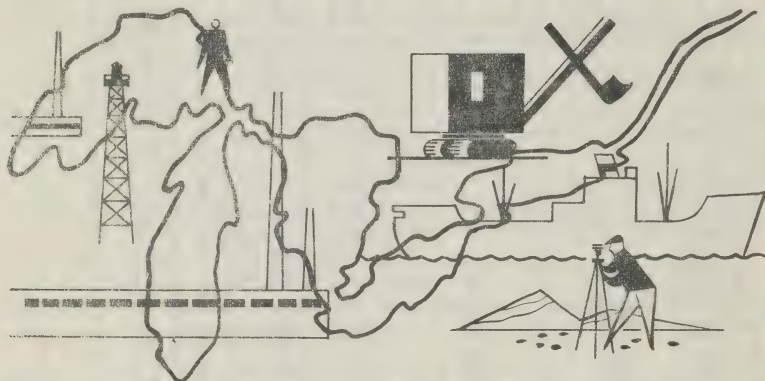
6 - Includes combined Chemistry - Physics courses

7 - Includes Honours Physics at all universities and Honours Mathematics at U. of Toronto

8 - Totals for 1962, followed by a + sign, are minimum totals only. Projected figures were not available for all courses at all universities.

In the Honours Science courses, a surprisingly large increase of approximately 40 per cent is foreseen in the mathematics and physics fields. Other Honours Science fields will remain relatively static, or in some instances show small declines in the number of graduates.

Starting salary ranges for both Honours scientists and engineers are among the highest reported. In engineering, a Bachelor's degree is the recognized professional qualification; however, a Master's degree is valuable in all fields of engineering, and is almost a necessity in some of the more highly specialized fields such as aeronautical and metallurgical engineering. The Canadian Department of Labour reports that 17 per cent of all aeronautical engineers in Canada today have Master's degrees, compared with eight per cent for the engineering profession generally.



The overall demand for engineers in Canada is ever increasing. To train these engineers, the universities are expanding their facilities, but their greatest need is for good teachers of engineering. However, the Canadian Council of Professional Engineers points out that a Master's degree is almost essential, and a Ph.D. preferable, for those considering an academic career.

Full professional qualifications for a scientist usually involve a Ph.D. However, employment in the professional field is available for Honours graduates at the Bachelor level, and a Master's degree represents a valuable added qualification. The Department of Labour reports that 18 per cent of all scientific and technical professionals have obtained a Master's or Doctor's degree.

The contrast between the levels of education of engineers and scientists is once again evident, with only one per cent of all engineers, compared to 24 per cent of all scientists (excluding those in agriculture and forestry), holding Doctor's degrees. In biology, 19 per cent have Master's and 38 per cent have Doctorates; in chemistry, 12 per cent have Master's and 20 per cent Doctorates; and in the field of physics 29 per cent have Master's and 29 per cent Doctorates.

The Canadian Institute of Chartered Accountants reports that some firms are

starting to employ engineering graduates as students-in-accounts. Sales engineering is a rapidly developing field of employment, with starting salaries being somewhat higher than for regular engineering positions.

Biological Sciences

This category includes bacteriology, microbiology, biochemistry, biology, zoology, and all associated courses of study. Increased enrolments in these courses should help meet the large demand in these fields, and graduates should have little trouble in finding suitable positions.

The largest demand for Honours graduates continues to be from government agencies, and in the teaching profession, particularly at the higher levels. Openings also exist in the research and scientific branches of industry and hospitals.

Specialists in the field of microbiology may find employment in departments of health, pharmaceutical firms, and in medical laboratories.

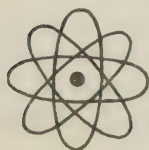
Geology and Geological Engineering

There will be fewer graduates in both Honours Geology and Geological Engineering in 1962. This is a continuation of the trend noted last year, caused by the upgrading of professional requirements in these fields, with the result that fewer opportunities for employment exist at the Bachelor level of qualification. Almost one-half of employed geologists now possess higher degrees, of which approximately 21 per cent have M.Sc.'s and 23 per cent Ph.D.'s.

Many of the graduates this year are expected to take postgraduate training. Professionally qualified graduates, those with graduate degrees, should readily find employment as the demand for those so qualified continues to grow.

Starting salaries for the Honours Sciencceman in geology at the Bachelor level will remain about the same, while the salaries for the M.Sc.'s and Ph.D's have shown a modest increase.

Physics and Engineering Physics



The trend established in 1961 is expected to continue, as once again a 20 per cent increase is anticipated in the number of graduates in physics and engineering physics. The demand for graduates from these courses continues to be high, and graduates should readily find employment. Starting salaries are good for the new graduate.

Among the more important fields of work for engineering physicists are nuclear engineering, electronics, and aeronautical research and design. In both

engineering physics and physics, rapid developments in the computer field are producing new specialized occupations. This is especially true at the graduate degree levels of training. Graduates may also find employment in geophysics and meteorology.

In both physics and engineering physics, postgraduate training is especially valuable, and it is generally true to say that one is not fully qualified professionally until some further training has been taken.

Mathematics

Last year's trend of an increasing number of graduates in the mathematics field is continuing. A 20 per cent rise in graduates is expected in 1962, compared with 13 per cent in 1961.

Graduates in mathematics will find many good employment opportunities in research projects in industry, in government, and in universities. There are two rapidly expanding fields in which mathematicians will find excellent employment opportunities. These are the actuarial profession, and research work in the computer field.

The continued expansion in the many plans of human welfare has contributed to the shortage of actuaries in Canada, and many more can be readily absorbed into the profession. The Canadian Association of Actuaries points out that there are only 1,200 fully qualified actuaries in North America while it is estimated that 2,300 will be required by 1968.

There is a tremendous expansion in the computer field which can absorb graduates in Honours Mathematics. However, there are even better employment opportunities for those with higher degrees.

Chemistry, Chemical, and Petroleum Engineering

Honours Chemists will be in short supply next year, as the number of graduates is expected to be less than that of 1961. This continues the trend noted last year. However, there is expected to be a 30 per cent increase in the number of chemical engineers graduating in 1962.

The Chemical Institute of Canada reports that there appears to be no difficulty in absorbing chemical engineering graduates at the Bachelor level, and virtually the entire graduating class of these people is employed in Canada.

The Institute advises, however, that, chemists at the Ph.D. level are finding that the possibility of obtaining suitable employment in Canada is diminished, and that approximately one-half of this group obtains positions outside of Canada.

Changes in the taxation field relating to research expenditures, recently announced by the Federal Government, may change this picture radically.

Graduates at the Bachelor level may find employment opportunities in the pulp and paper industry, petroleum refineries, food processors, government agencies, and at the university teaching level. Starting salaries for graduates are good.

Civil and Mechanical Engineering



The demand for graduates in mechanical engineering continues to be high, and graduates in these fields should readily find employment. A 10 per cent increase of graduates in Civil Engineering, and a 17 per cent increase in Mechanical Engineering, is expected in 1962. This is approximately the same rate of increase as that shown by the 1961 graduating class over that of 1960.

Although there was a definite shortage of employment opportunities for graduates in civil engineering in 1961, the Engineering Institute of Canada anticipates a greater demand for these graduates in 1962.

Engineers in these two disciplines can find employment in a wide variety of fields. Large national firms and small local firms both offer excellent employment opportunities.

Metallurgical and Mining Engineering

The trend noted last year, toward an increase in the number of metallurgical engineering graduates, is expected to continue in 1962, with an anticipated rise of almost 15 per cent in the number of graduates, compared with a 10 per cent increase in 1961. Contrasted with this is a predicted decline in the number of mining engineering graduates, or, at best, a graduation class of about the same size as that for 1961, somewhat fewer than 60 in number.

Metallurgical Engineers at the Bachelor level should experience no difficulty in finding employment; however, there is a growing preference for more graduate training in this field, with a Master's degree being considered as almost a minimum qualification for professional standing for the new graduate. There is a higher percentage of Doctorates, in metallurgical engineering, than in any other engineering field.

Graduates in this field may expect good starting salaries, while starting salaries for mining engineers are among the highest in the profession.

Electrical Engineering

A 20 per cent increase in graduates is expected in the electrical engineering field. Graduates should find no difficulty in obtaining employment, as the demand continues for professionally qualified people in this field. The field in which electrical engineers may choose their career is wide, as it embraces design, manufacturing, utilities, and communications.

The Electronics Industries Association of Canada stresses the importance of options in electronics and communications, should a student wish to enter the electronics industry.

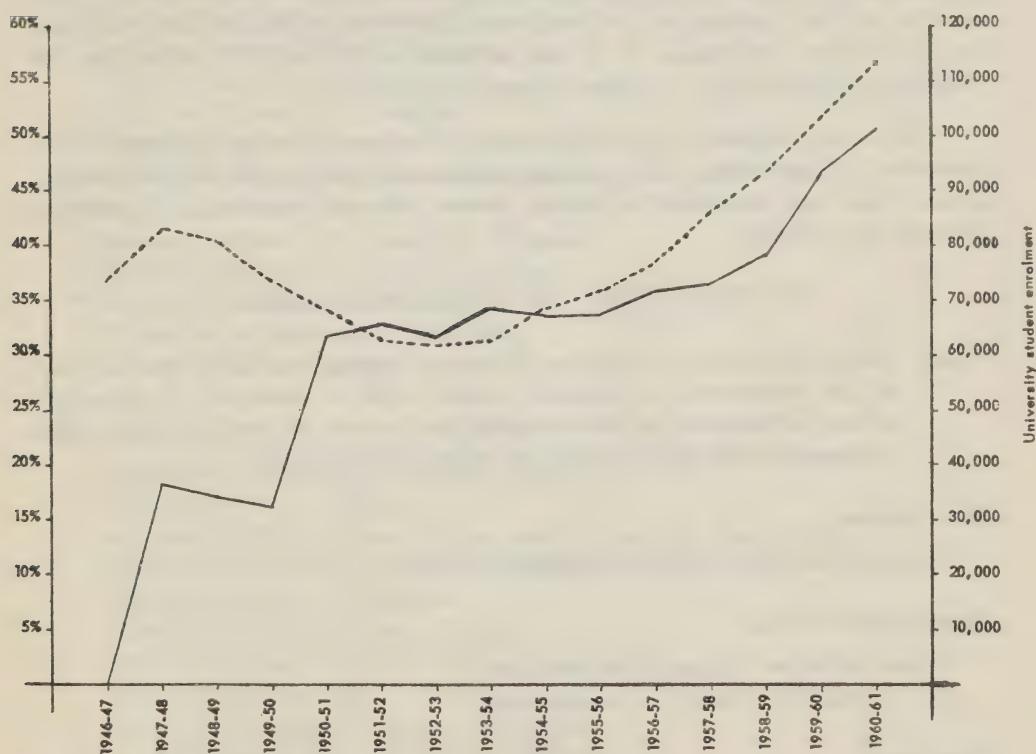
Starting salaries for the new graduates are good.

THE NES STUDENT PLACEMENT SERVICE

The National Employment Service launched its specialized service for university students in the fall of 1947 at the three prairie-province universities. Since that time, the service has expanded until it passed what can be called the half-way mark last year. There are now 14 campus placement offices, stretching from coast to coast, serving institutions having more than half of the total Canadian university enrolment. In addition, a fifteenth office has been established to provide for the first time NES campus placement service to a technological institute, the Southern Alberta Institute of Technology in Calgary.

— Percentage of Canadian university students served by NES campus placement offices.

-----Actual total university enrolments since academic year 1946-47



Each of these 15 offices is staffed by specially selected personnel who

service the respective institutions full time during the academic year. Regular staff from local National Employment Offices provide assistance to students of those institutions of higher learning where there are as yet no NES campus placement offices.

The recruiting of university students by employers is a continuous process which starts early in the academic year, and which continues until the advent of final examinations. Almost all of the major national employers are active in this recruiting, and most of the larger firms send recruiting teams to one or more higher educational institutions. Local employers are also major recruiters, but are not as active in sending recruiting teams to the campus itself.

Students desiring assistance in finding employment are individually interviewed to determine interests and abilities. These students can then be referred by placement officers to employers with suitable employment opportunities. This is done by direct referral to local employers, by the use of NES referral facilities for out-of-town employers, or by the arrangement of interview schedules for visiting recruiters at the 15 campus placement offices.

The major emphasis of the NES Student Placement Service is geared to the placement of graduating and graduate students in employment of a continuing nature. However, assistance in finding summer jobs and part-time employment is given to all students.

INSTITUTIONS OF HIGHER LEARNING

Note: The NES operates a full-time placement service on the campus of each of the undernoted institutions marked with an asterisk. A placement service is provided to the remaining institutions, as well as others, from the nearest NES office, except as otherwise indicated.

Newfoundland

- * Memorial University of Newfoundland, St. John's

Prince Edward Island

Prince of Wales College, Charlottetown
St. Dunstan's University, Charlottetown

Nova Scotia

- Acadia University, Wolfville
- Collège Sainte-Anne, Church Point
- * Dalhousie University, Halifax
- Mount Saint Vincent College, Halifax
- Nova Scotia Agricultural College, Truro

Nova Scotia Technical College, Halifax
Saint Francis Xavier University, Antigonish
Saint Mary's University, Halifax

New Brunswick

Mount Allison University, Sackville
New Brunswick Technical Institute, Moncton
Saint Thomas University, Chatham
Université du Sacré-Coeur, Bathurst
University of New Brunswick, Fredericton
Université Saint-Louis, Edmundston
Université Saint-Joseph, Moncton

Quebec

- 1 Bishop's University, Lennoxville
- Collège Jean-de-Brébeuf, Montréal
- Collège Sainte-Marie, Montréal
- Ecole des Beaux-Arts, Montréal
- * Loyola College, Montreal
- 2 Macdonald College, Ste-Anne-de-Bellevue
- 3* McGill University, Montreal
- Montreal Institute of Technology, Montreal
- * Sir George Williams University, Montreal
- * Université de Montréal, Montréal
- * Université de Sherbrooke, Sherbrooke
- * Université Laval, Québec

Ontario

- Assumption University of Windsor, Windsor
- Carleton University, Ottawa
- Lakehead College of Arts, Science and Technology, Port Arthur
- Laurentian University of Sudbury, Sudbury
- McMaster University, Hamilton
- Ontario Agricultural College, Guelph
- Ontario Veterinary College, Guelph
- Osgoode Hall Law School, Toronto
- Queen's University at Kingston, Kingston
- Royal Military College of Canada, Kingston
- Ryerson Institute of Technology, Toronto
- * Université d'Ottawa, Ottawa
- University of Toronto, Toronto
- University of Waterloo, Waterloo
- University of Western Ontario, London
- Waterloo University College, Waterloo

Manitoba

- Brandon College, Brandon
- 4 United College, Winnipeg
- * University of Manitoba, Fort Garry, Winnipeg

Saskatchewan

- * University of Saskatchewan, Saskatoon
- University of Saskatchewan, Regina Campus, Regina

Alberta

- Mount Royal College, Calgary
- * Southern Alberta Institute of Technology, Calgary
- * University of Alberta, Edmonton
- * University of Alberta in Calgary, Calgary

British Columbia

- University College of Notre Dame, Nelson
- University of British Columbia, Vancouver
- * Victoria College, Victoria

- 1 Placement service handled by NES officer at Université de Sherbrooke
- 2 Placement service handled by NES officer at McGill University
- 3 The NES officer works in conjunction with the McGill University Placement Service
- 4 Placement service handled by NES officers at the University of Manitoba

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